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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Customer No.	23643	
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Application No.:	09/618,615	**FILED ELECTRONICALLY:**
Invention:	NEURAL NETWORKS FOR INGRESS MONITORING	**July 23, 2007**
Inventor:	Gary W. Sinde	
Filed:	July 18, 2000	
Attorney Docket:	6573-62441	
Examiner:	Donald L. Champagne	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal brief is submitted in triplicate in furtherance of the notice of appeal submitted May 23, 2007 and in response to the Official Action dated March 8, 2007. The $250.00 fee for filing this appeal brief was submitted with the appeal brief submitted September 28, 2005. Should any additional fees be required to constitute this a timely appeal brief, the Commissioner is hereby authorized to charge any such fees, or credit any overpayment, to Deposit Account No. 10-0435, with reference to Appellant's undersigned counsel's file 6573-62441. A duplicate copy of this authorization is enclosed for that purpose.

Real Party In Interest

The real party in interest is Trilithic, Inc., by virtue of assignments recorded July 20, 1999 in the records of the Patent and Trademark Office on patent record reel 010117, beginning at frame 0458 and July 18, 2000 in the records of the Patent and Trademark Office on patent record reel 011127, beginning at frame 0826.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-40, all of the claims remaining in this application, are rejected. The rejections of all of claims 1-40 are appealed. Claims 41-124 have been cancelled without prejudice.

Status of Amendments

No amendments were filed subsequent to the rejection from which this appeal is taken.

Summary of Claimed Subject Matter

The invention may best be understood by referring to the following copies of appealed claims 1-40, annotated with parenthetic reference numbers and related notes from the detailed description.

With reference to claim 1, the invention is a method of identifying a source of ingress into a network (cable return path) including storing (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), comparing (page 13, line 10--page 14, line 6) the frequency spectrum of ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 2, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 3, the invention is the method of claim 2 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress (CB signal, AM radio, common path distortion) to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 4, the invention is the method of claim 3 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 5, the invention is the method of claim 4 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 6, the invention is the method of claim 1 further including digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 7, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line

6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 8, the invention is the method of claim 7 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 9, the invention is the method of claim 8 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 10, the invention is the method of claim 9 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 11, the invention is the method of claim 6 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path

distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 12, the invention is the method of claim 11 wherein comparing (page 13, line 10--page 14, line 6) the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which of the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) is closest to the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 13, the invention is the method of claim 12 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 14, the invention is the method of claim 13 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 15, the invention is the method of claim 14 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10)

frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 16, the invention is the method of claim 1 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 17, the invention is the method of claim 16 wherein comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which thus-digitized (page 11, lines 2-10) frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress together include finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 18, the invention is the method of claim 17 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 19, the invention is the method of claim 18 wherein finding (page 12, line 22-page 13, line 26) an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) includes using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-

digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 20, the invention is the method of claim 19 wherein teaching (page 13, lines 10-29) a neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and using a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) together include using a particle swarm optimizer (page 13, lines 10-26) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 21, the invention is an apparatus (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for identifying a source of ingress into a network (cable return path) including memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for comparing (page 13, line 10--page 14, line 6) the frequency spectrum of the ingress to frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and determining (page 13, line 10--page 14, line 6) from the comparison which frequency spectrum of a known source of ingress (CB signal, AM radio, common path distortion) is closest to the frequency spectrum of the ingress.

With reference to claim 22, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 23, the invention is the apparatus of claim 22 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 24, the invention is the apparatus of claim 23 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel®

spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 25, the invention is the apparatus of claim 24 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion), the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together including a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 26, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectrum of the ingress.

With reference to claim 27, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-

based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 28, the invention is the apparatus of claim 27 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 29, the invention is the apparatus of claim 28 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to

the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 30, the invention is the apparatus of claim 29 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 31, the invention is the apparatus of claim 26 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 32, the invention is the apparatus of claim 31 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL

INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 33, the invention is the apparatus of claim 32 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 34, the invention is the apparatus of claim 33 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) further includes a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 35, the invention is the apparatus of claim 34 wherein the neural network (Fig. 6) and back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum

solution to the problem of comparison of the thus-digitized (page 11, lines 2-10) frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 36, the invention is the apparatus of claim 21 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24) for digitizing (page 11, lines 2-10) the frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion) and the memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) includes a memory (ingress manager software captures 50 samples of each type of disturbance, and writes the 50 samples of each to its respective file: CB_50.SST, AM_50.SST, CP_50.SST, and NOISE_50.SST) for storing the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 37, the invention is the apparatus of claim 36 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 38, the invention is the apparatus of claim 37 wherein the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) includes a neural network (Fig. 6), the device (24, 26, 30, Windows® 3.1 or later version software; Trilithic SST Ingress Manager data collection and warning system software or equivalent; Trilithic SST File Translator binary-to-spreadsheet converter software or equivalent; Microsoft® Excel® spreadsheet software or equivalent; particle swarm optimizer algorithm provided with RUSS EBERHART ET AL., COMPUTATIONAL INTELLIGENCE PC TOOLS, 1996, converted from DOS-based application to run under Windows® software) teaching (page 13, lines 10-29) the neural network (Fig. 6) the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 39, the invention is the apparatus of claim 38 further including a back propagation neural network (page 13, lines 5-9, Fig. 6) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

With reference to claim 40, the invention is the apparatus of claim 39 wherein the neural network (Fig. 6) and the back propagation neural network (page 13, lines 5-9, Fig. 6) together include a particle swarm optimizer (page 13, lines 10-26) for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized (page 11, lines 2-10) frequency spectra of known sources of ingress (CB signal, AM radio, common path distortion).

Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed by the Board are:

(1) whether claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 are anticipated under 35 U.S.C. § 102 based upon Nickolls U. S. Patent 5,251,626 (hereinafter Nickolls), with the addition of Kullok published U. S. patent application 20040230252A1 (hereinafter Kullok), Peel, III U. S. Patent 5,865,756 (hereinafter Peel), Wei U. S. Patent 4,481,191 (hereinafter Wei), Stroetmann U. S. Patent 5,578,061 (hereinafter Stroetmann) and

Wirth U. S. Patent 6,414,030 (hereinafter Wirth), all of which the Examiner uses to support his argument of inherency based upon Nickolls (while the Examiner has framed the rejection as a 35 U. S. C. § 102 rejection, he relies on five additional references to support his inherency argument); and,

(2) whether claims 5, 10, 15, 20, 25, 30, 35 and 40 would have been obvious under 35 U.S.C. § 103 based upon the combination of Nickolls and Eberhart U. S. Patent 6,516,309 (hereinafter Eberhart).

Argument

I. Nickolls, Kullok, Peel, Wei, Stroetmann, Wirth, Inherency and Anticipation

The Examiner rejected claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 under 35 U. S. C. § 102. The Examiner relied upon Nickolls to support this rejection. The Examiner takes the position that Nickolls

> "teaches [ ] a method and apparatus for identifying arrhythmias (abnormal heart rhythms) by monitoring physiological signals (col. 6 lines 5-14) descriptive of heart activity on the human nervous system (col. 9 lines 47-48), which reads on identifying a source of ingress into a network [ ], including classifying electrocardiogram (ECG) waveforms (col. 5 lines 48-54), which reads on storing frequency spectra of known arrhythmias (col. 7 lines 3-8 and Figs. 7-9), comparing the intput ECG spectra with the spectra of known arrhythmias, and determining from the comparison which of the frequency spectra of known arrhythmias is closest to the input ECG spectra (col. 11 lines 28-38 and Figs. 4 and 5, described at col. 12 line 11 to col. 13 line 65)."

The Examiner then relies upon Kullok, Peel, Wei, Stroetmann and Wirth as evidence to support what he contends is inherent in Nickolls. The Examiner continues:

> "Nickolls [ ] does not explicitly teach that the heart is the source of arrhythmia signal ingress to the nervous system network. However, under principles of inherency (MPEP § 2112.02), since the reference invention necessarily performs the method claimed, the method claimed is considered to be anticipated by the reference invention. As evidence tending to show inherency, it is noted that Kullok [ ] teaches that the nervous system is the central network of the human body (para. [0012]) and Peele (sic--Peel), III [ ] teaches that the heart is the source external to the nervous system of arrhythmia signals (col. 2 lines 17-12). Wei [ ] (col. 3 lines 30-37), Stroetmann [ ] ([ ] col. 2 lines 51-60) and Wirth [ ] ([ ] col. 2 lines 25-28, col. 13 lines 48-53 and col. 13 line 67 to col. 14 line 7) teach that the nervous system can act on the heart."

The March 8, 2007 rejection, page 2, line 21-page 3, line 12.

Dealing first with the other references cited by the Examiner in support of his inherency contentions contained in the second of the above-quoted paragraphs, a brief discussion of heart arrhythmias is instructive. As stated by the Patton Law Practice, HeartInfo.Org, the Mayo Clinic, St. Luke's-Roosevelt Hospital Center, and various other sources cited below, arrhythmia signals are generated and communicated within the heart, thus implicating no ingress or egress.

> Normally each heartbeat starts in the right atrium. Here, a specialized group of cells called the sinus node, or natural pacemaker, sends an electrical signal. The signal spreads throughout the atria to the area between the atria called the atrioventricular (AV) node.
>
> The AV node connects to a group of special pathways that conduct the signal to the ventricles below. As the signal travels through the heart, the heart contracts. First the atria contract, pumping blood into the ventricles. A fraction of a second later, the ventricles contract, sending blood throughout the body.
>
> An arrhythmia may occur for one of several reasons:
>
> - Instead of beginning in the sinus node, the heartbeat begins in another part of the heart.
> - The sinus node develops an abnormal rate or rhythm.
> - A patient has a heart block.
>
> There are many types of arrhythmias. Arrhythmias are identified by where they occur in the heart (atria or ventricles) and by what happens to the heart's rhythm when they occur.

Patton Law Practice, http://patton.lexipal.com/monograph/128 (last visited Jun. 26, 2007). *See also*: HeartInfo.Org Patient Guide, http://www.heartinfo.org/ms/guides/19/main.html (last visited Jun. 26, 2007); The Arrhythmia Service, http://www.arrhythmia.org/general/whatis/ (last visited Jun. 26, 2007); and, MayoClinic.Com, http://www.mayoclinic.com/health/heart-arrhythmias/DS00290 (last visited Jun. 26, 2007).

Kullok is not prior art, having been filed February 17, 2004. The present application claims the benefit of U. S. S. N. 60/144,678 filed July 20, 1999.

The passage from Peel to which the Examiner refers for support for his argument of inherency in Nickolls is,

> "Arrhythmias can be produced by a number of abnormalities in the electromyocardial conduction system. The physiologic events that cause arrhythmias originate in the heart rather than the central nervous system."

Peel, col. 2, lines 17-20. Taken in its context, this language does not serve to teach anything other than that, as previously discussed, arrhythmia signals are generated and communicated within the heart. It does not assert, nor does it imply, that "the heart is the source external to the nervous system of arrhythmia signals" that later find their way into the nervous system and get analyzed to find out what kinds of arrhythmias they are or what their source is.

The passage from Wei to which the Examiner refers for support for his argument of inherency in Nickolls is, "The autonomic nervous system is a critical monitoring network for the maintenance of a variety of physiological functions." Wei, col. 2, lines 34-36. This quotation does not assert, nor does it imply, that "the heart is the source external to the nervous system of arrhythmia signals" that later find their way into the nervous system and get analyzed to find out what kinds of arrhythmias they are or what their source is.

The passage from Stroetmann to which the Examiner refers for support for his argument of inherency in Nickolls is:

> "[t]he above object is achieve (sic) in accordance with the principles of the present invention in a method and an apparatus wherein, following the detection of an impending or established arrhythmia, a first pulses current is supplied to a physiological representative of the parasympathetic nervous system in order to activate the parasympathetic nervous system, and a second current is also supplied via an electrode system to a physiological representative of the sympathetic nervous system in order to block the sympathetic nervous system with respect to its action on the heart."

Stroetmann, col. 2, lines 51-60. Stroetmann describes a feedback control for a pacemaker. According to Stroetmann, the autonomic nerve system innervates the heart in the form of two sub-system, the sympathetic and the parasympathetic. Increased signal activity in the sympathetic nerve increases heart activity (heart rate and stroke volume), whereas increased signal activity in the vagus nerve reduces heart activity (heart rate). Activity in the sympathetic nerve and the vagus nerve normally balance each other so that the heart maintains an appropriate rate at rest of about 70 beats per minute. Increased activity in the sympathetic nerve in the case of impending or established tachyarrythmia is monitored by indirect measurement of sympathetic activity in order to control the emission of activating electrical pulses to the vagus nerve during impending or established tachyarrythmia. In this context, the above-quoted passage from Stroetmann does not assert, nor does it imply, that "the heart is the source external to the nervous system of arrhythmia signals" that later find their way into the nervous system and get analyzed to find out what kinds of arrhythmias they are or what their source is.

The passages from Wirth to which the Examiner refers for support for his argument of inherency in Nickolls are:

> "Damage to the health which result from an imbalance of the autonomous nervous system when the dysfunction affects the heart are, for example, weakening of the strength of the heart or sometimes fatal cardiac arrhythmias."

Wirth, col. 2, lines 25-28;

> "By eliminating or reducing the dysfunction of the autonomous nervous system, the compounds of the formula I and their physiologically acceptable salts lead to a normalization of the weakened strength of the heart and to the prevention of the development of cardiac arrhythmias which can lead to sudden cardiac death."

Wirth, col. 13, lines 48-53; and,

> "Depending on the particular symptoms, it may also be advantageous to employ compounds of the formula I which only have a relatively low direct effect on the heart and accordingly only have, for example, a relatively low direct effect on the contractile force of the heart or the generation of arrhythmias, but which can improve or normalize the strength of the heart or the heart rhythm by influencing the autonomous nervous system."

Wirth, col. 13, line 67-col. 14, line 7. Again, there is nothing in the above-quoted passages from Wirth that asserts, or implies, that "the heart is the source external to the nervous system of arrhythmia signals" that later find their way into the nervous system and get analyzed to find out what kinds of arrhythmias they are or what their source is.

If this were truly a case of inherency, why would the Examiner need Kullok, Peel, Wei, Stroetmann and Wirth? Shouldn't Nickolls suffice?

Turning now to Nickolls, Nickolls relates to medical devices which monitor the cardiac state of a patient by sensing the patient's intrinsic rhythm for the presence of arrhythmias and which deliver therapy in the form of electrical energy to cardiac tissue in an attempt to revert ventricular fibrillation (VF) and other detected arrhythmias and restore a normal sinus rhythm to the patient. Nickolls, col. 1, lines 11-17. More particularly, Nickolls describes an apparatus and method for the detection and treatment of cardiac arrhythmias by the use of a neural network. Nickolls utilizes a neural network for arrhythmia recognition, diagnosis, and therapy control or a warning system to a patient. Nickolls's neural network is a parallel processing system, and is said to have the capability of recognizing VF's and other forms of arrhythmias in real time accurately and with low power consumption. Nickolls's device is said to provide an enhanced complex therapy control and the ability to make

diagnostic decisions using incomplete data. Nickolls's device is said to be applicable to all types of heart pacemaker sensing and therapy including bradycardia and rate responsive pacing. Nickolls, col. 1, lines 19-34. The physiological signals in Nickolls are those representative of heart activity in a patient. Nickolls, abstract. The source of the signals in Nickolls is the heart. The source of the signals in Nickolls is thus known.

MPEP §2112.02 provides that:

> Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device.

> To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.

Continental Can Co. v. Mansanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991) (quoting *In re Oelrich*, 666 F.2d 578 (CCPA 1981)). The Nickolls invention would not, in its normal and usual operation, necessarily perform the method claimed in the present invention. Nickolls claims a method of controlling arrhythmias in a patient's heart by acquiring physiological signals from the heart and delivering a corresponding therapy to the heart. The present application claims a method of identifying a source of ingress into a network. This identified source of ingress may be any of a multitude of sources. In Nickolls, all the signals originate in the heart which is being treated. Acquiring physiological signals from a patient's heart is not equivalent to identifying an unknown source of ingress into a network.

The Examiner argues that Nickolls inherently provides that "the heart is the source of arrhythmia signal ingress to the nervous system network". This would require that Nickolls, in its normal and usual operation, would necessarily operate with the heart being a source of arrhythmia signal ingress to the nervous system. "Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. v. Mansanto Co., supra.* But Nickolls nowhere discusses ingress or egress. And with good reason. Arrhythmia signals require no ingress or egress.

Nickolls's signals are ECG signals, albeit abnormal ones. Nickolls is not trying to identify a noise source. The source is the patient's heart. The information received

by Nickolls's device is not noise, but electrical signals being generated by the patient's heart. Nickolls examines the heart-generated signals, and compares those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing. Nickolls does this in order to apply the appropriate electrical signal to the distressed heart in an effort to reestablish normal heart electrical signals. Nothing in Nickolls has anything to do with noise. Nickolls is not responding to noise. For Nickolls to respond to noise presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls. Misidentifying the distress signal would lead to applying the wrong kind of electrical signal to the patient's heart, with potentially fatal consequences.

The present invention relates to the identification of the ingress noise from external and unknown sources into networks. The present invention provides a method and apparatus for monitoring and identifying the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens' band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources.

II. Claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34 and 36-39 are patentable over Nickolls

Nowhere does Nickolls disclose or suggest claim 1's specifically recited

> "identifying *a source of ingress into a network* including storing *frequency spectra of known sources of ingress*, comparing the *frequency spectrum of ingress to the frequency spectra of known sources of ingress*, and *determining* from the comparison *which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress*"

(italics Appellant's). The italicized elements of claim 1 are neither disclosed nor suggested by any reading of Nickolls. Claim 1 is allowable at least on this basis.

Claim 2 depends from claim 1 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include* finding an optimum solution *to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 2 (italics Appellant's). Claim 2 is allowable on this basis as well.

Claim 3 depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* teaching a neural network *the frequency spectra of known sources of ingress*

as specifically recited in claim 3 (italics Appellant's). Claim 3 is allowable on this basis as well.

Claim 4 depends from claim 3, which depends from claim 2, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress include*s using a back propagation neural network to find an optimum solution *to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 4 (italics Appellant's). Claim 4 is allowable on this basis as well.

Claim 6 depends from claim 1 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests *digitizing the frequency spectrum of the ingress*, as specifically recited in claim 6 (italics Appellant's). Claim 6 is allowable on this basis as well.

Claim 7 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress together include* finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 7 (italics Appellant's). Claim 7 is allowable on this basis as well.

Claim 8 depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses

nor suggests that

> finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* teaching a neural network *the frequency spectra of known sources of ingress*

as specifically recited in claim 8 (italics Appellant's). Claim 8 is allowable on this basis as well.

Claim 9 depends from claim 8, which depends from claim 7, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes* using a back propagation neural network to find an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 9 (italics Appellant's). Claim 9 is allowable on this basis as well.

Claim 11 depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 11 (italics Appellant's). Claim 11 is allowable on this basis as well.

Claim 12 depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and* determining from the comparison *which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include* finding an optimum solution to the problem of comparison *of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 12 (italics Appellant's). Claim 12 is allowable on this basis as

well.

Claim 13 depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 13 (italics Appellant's). Claim 13 is allowable on this basis as well.

Claim 14 depends from claim 13, which depends from claim 12, which depends from claim 11, which depends from claim 6, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes* using a back propagation neural network to find an optimum solution *to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 14 (italics Appellant's). Claim 14 is allowable on this basis as well.

Claim 16 depends from claim 1 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress*

as specifically recited in claim 16 (italics Appellant's). Claim 16 is allowable on this basis as well.

Claim 17 depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 17 (italics Appellant's). Claim 17 is allowable on this basis as well.

Claim 18 depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 18 (italics Appellant's). Claim 18 is allowable on this basis as well.

Claim 19 depends from claim 18, which depends from claim 17, which depends from claim 16, which depends from claim 1, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includes using a back propagation neural network to find an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 19 (italics Appellant's). Claim 19 is allowable on this basis as well.

Nowhere does Nickolls disclose or suggest claim 21's specifically recited

> memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress (italics Appellant's).

Claim 22 depends from claim 21 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a device for finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 22 (italics Appellant's). Claim 22 is allowable on this basis as well.

Claim 23 depends from claim 22, which depends from claim 21, and is

allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 23 (italics Appellant's). Claim 23 is allowable on this basis as well.

Claim 24 depends from claim 23, which depends from claim 22, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 24 (italics Appellant's). Claim 24 is allowable on this basis as well.

Claim 26 depends from claim 21 and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that *the device includes a device for digitizing the frequency spectrum of the ingress*, as specifically recited in claim 26 (italics Appellant's). Claim 26 is allowable on this basis as well.

Claim 27 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 27 (italics Appellant's). Claim 27 is allowable on this basis as well.

Claim 28 depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a neural network, *the device teaching the neural network the frequency spectra of known sources of ingress*

as specifically recited in claim 28 (italics Appellant's). Claim 28 is allowable on this basis as well.

Claim 29 depends from claim 28, which depends from claim 27, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis.

Additionally, Nickolls neither discloses nor suggests that

> the device includes a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

as specifically recited in claim 29 (italics Appellant's). Claim 29 is allowable on this basis as well.

Claim 31 depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 31 (italics Appellant's). Claim 31 is allowable on this basis as well.

Claim 32 depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 32 (italics Appellant's). Claim 32 is allowable on this basis as well.

Claim 33 depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 33 (italics Appellant's). Claim 33 is allowable on this basis as well.

Claim 34 depends from claim 33, which depends from claim 32, which depends from claim 31, which depends from claim 26, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device further includes a back propagation neural network for finding an optimum solution to the *problem of comparison of the thus-digitized frequency spectrum of the ingress to the*

> *thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 34 (italics Appellant's). Claim 34 is allowable on this basis as well.

Claim 36 depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> *the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 36 (italics Appellant's). Claim 36 is allowable on this basis as well.

Claim 37 depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a device for finding an optimum solution to the problem of *comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 37 (italics Appellant's). Claim 37 is allowable on this basis as well.

Claim 38 depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests that

> the device includes a neural network, *the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 38 (italics Appellant's). Claim 38 is allowable on this basis as well.

Claim 39 depends from claim 38, which depends from claim 37, which depends from claim 36, which depends from claim 21, and is allowable at least on this basis. Additionally, Nickolls neither discloses nor suggests a

> back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

as specifically recited in claim 39 (italics Appellant's). Claim 39 is allowable on this basis as well.

Because claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39

distinguish patentably from Nickolls, the 35 U. S. C. § 102 rejection of claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, 31-34, and 36-39 is erroneous. Appellant respectfully requests that such rejection be reversed.

III. The 35 U. S. C § 103 rejections based upon the combination of Nickolls and Eberhart

The Examiner rejected claims 5, 10, 15, 20, 25, 30, 35 and 40 under 35 U. S. C. § 103. The Examiner relied upon the combination of Nickolls and Eberhart to support this rejection.

A. Determining the nature of cardiac distress by analyzing signals generated in the distressed heart is non-analogous to determining a source of ingress noise entering into a network.

First, Nickolls is non-analogous, and thus incapable of being relied upon to reject Appellant's claims under 35 U. S. C. § 103. In <u>In re Clay</u>, 966 F.2d 656, 23 USPQ2d 1058, for example, the Court observed that

> Two criteria have evolved for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved (citing <u>In re Deminski</u>, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986); <u>In re Wood</u>, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)). <u>Clay</u> at 1060.

In <u>Clay</u>, the issue was whether a reference (Sydansk) which disclosed a process using a gel for reducing the permeability of hydrocarbon-bearing formations (useful in the recovery of oil from an oil field, for example) was analogous art to Clay's claimed process for using a similar gel to fill a dead volume in the bottom of a liquid hydrocarbon storage tank. <u>Clay</u>, supra. The Court observed that

> Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry. Sydansk teaches the use of a gel in unconfined and irregular volumes within generally underground natural oil-bearing formations to channel flow in a desired direction; Clay teaches the introduction of gel to the confined dead volume of a man-made storage tank. The Sydansk process operates in extreme conditions, with petroleum formation temperatures as high as 115°C and at significant well bore pressures; Clay's process apparently operates at ambient temperature and atmospheric

> pressure. Clay's field of endeavor is the storage of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand, is the extraction of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's. Clay, supra., emphasis the Court's.

The Court noted that

> Even though the art disclosed in Sydansk is not within Clay's field of endeavor, the reference may still properly be combined with Hetherington [another reference] if it is reasonably pertinent to the problem Clay attempts to solve. In re Wood, 599 F.2d at 1036, 202 USPQ at 174. A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Clay at 1060-61.

The Court analyzed Sydansk's pertinence to the problem Clay was trying to solve, observing that

> Sydansk's gel treatment of underground formations functions to fill anomalies so as to improve flow profiles and sweep efficiencies of injection and production fluids through a formation, while Clay's gel functions to displace liquid product from the dead volume of a storage tank. Clay at 1061, footnote omitted,

and concluded that

> A person having ordinary skill in the art would not reasonably have expected to solve the problem of dead volume in tanks for storing refined petroleum by considering a reference dealing with plugging underground formation anomalies. The Board's finding to the contrary is clearly erroneous. Since Sydansk is non-analogous art, the rejection over Hetherington in view of Sydansk cannot be sustained. Clay, supra.

In Wang Laboratories Inc. v. Toshiba Corp, 993 F.2d 858, 26 USPQ2d 1767 (Fed. Cir. 1993), the court held that, even though a prior patent and the subject patents all relate to the same computer memories, they are not in the same field of endeavor, because the prior patent "involves memory circuits in which modules of varying sizes may be added or replaced; in contrast, the subject patents teach compact modular memories." Wang Laboratories, Inc., 993 F.2d at 864. The court further held that the prior art was not reasonably pertinent because the subject patents deal with memories used in personal computers whereas the prior art deals with a memory circuit for a large, more costly industrial controllers. *Id.* at 864-865. The court concluded that the subject patents were non-

analogous to the prior art patent. Id.

As in the court's discussion in Wang Laboratories, Inc., because the present invention and Nickolls are not in the same field of endeavor and Nickolls is not reasonably pertinent to the present invention, Nickolls is non-analogous to the present invention. Therefore it would not have been obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise.

In In re Oetiker, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992), the Court reversed the Board's reasoning and held that the Board erred in finding that "all hooking problems are analogous." Id. at 1445 The Court noted that

> [i]n order to rely on a reference as a basis for rejection of the applicant's invention, the reference must either be in the field of the applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See In re Deminski, 796 F.2d 436, 442, 230 USPQ 313, 315 (Fed. Cir. 1986). Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor. We have reminded ourselves and the PTO that it is necessary to consider "the reality of the circumstances," In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979) - in other words, common sense - in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.
>
> It has not been shown that a person of ordinary skill, seeking to solve a problem of fastening a hose clamp, would reasonably be expected or motivated to look to fasteners for garments. The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness.
>
> * * *
>
> We conclude that the references on which the Board relied were improperly combined. Accordingly, the Board erred in holding the claims unpatentable under section 103. The rejection of claims 1-4 and 16-21 is REVERSED.

Oetiker at 1445-46. (emphasis added)

In rejecting Appellant's claims 5, 10, 15, 20, 25, 30, 35 and 40, the Examiner explicitly ignores the Federal Circuit's observation that "[i]t has not been shown that a person

of ordinary skill, seeking to solve a problem of fastening a hose clamp [here insert "the problem of determining the source of ingress noise into a network"], would reasonably be expected or motivated to look to fasteners for garments [here insert "techniques for identifying what type of cardiac distress a person is experiencing"]. The combination of elements from non-analogous sources [Nickolls], in a manner that reconstructs [Appellant's] invention only with the benefit of hindsight, is insufficient to present a prima facie case of obviousness." Nickolls is non-analogous. The combination of elements from non-analogous sources, in a manner that reconstructs Appellant's invention only with the benefit of hindsight, is insufficient to make a *prima facie* case of obviousness.

The difference between Nickolls and the present invention is substantial. Nothing in Nickolls discloses or suggests anything having anything to do with noise at all. Indeed, Nickolls had better not be responding to noise, since to do so presumably would result in the wrong signal being applied to the heart of the patient being treated by the apparatus and method of Nickolls, jeopardizing the heart rhythm of the patient being treated by the apparatus and method of Nickolls.

The present invention provides a method and apparatus to monitor and identify the sources of ingress noise into a network. Ingress noise into a network can be from multiple different and unknown origins, external to the network. These sources include, but are by no means limited to, amateur radio, citizens' band radio, machinery noise, home appliance noise, home computer clock signals, AM radio, and other electrical sources. The application as filed, page 1, line 25-page 2, line 2. A person of ordinary skill in the field of the present invention, such as in the field of community antenna television (CATV), seeking to solve a problem of monitoring and identifying the source of ingress noise into such networks, would not reasonably be expected or motivated to look to apparatus and methods for the identification and treatment of human heart abnormalities.

"We have reminded ourselves and the PTO that it is necessary to consider 'the reality of the circumstances', <u>In re Wood</u>, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979)-in other words, common sense-in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor." <u>In re Oetiker</u>, *supra*. The Federal Circuit's common sense approach precludes Nickolls from being reasonably pertinent or analogous to the present invention. Nickolls is non-analogous art to the invention of the present claims. Therefore it would not have been 35 U. S. C. § 103 obvious to one of ordinary skill in the art at the time of the invention to apply the teachings of Nickolls to the identification of ingress noise.

The Examiner concedes that Nickolls does not teach a particle swarm optimizer (hereinafter sometimes PSO). The Examiner calls Appellant's attention specifically to Eberhart's col. 1, line 64 to col. 2, line 7. The Examiner indicates that Eberhart teaches that a "PSO can improve the efficiency of diagnostic neural networks." The Examiner concludes that "it would have been obvious to one of the ordinary skills in the art, at the time of the invention, to add the teachings of Eberhart et al. to those of Nickolls et al." The March 8, 2007 rejection, page 3, lines 20-22.

B. But further, there is no disclosure or suggestion to combine, or how to combine, nor any expectation of success from any combination of Nickolls and Eberhart to solve the specific problem to which the present invention is addressed.

The PTO has the burden under section 103 to establish a *prima facie* case of obviousness (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984)). Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1138, 227 USPQ 543, 548 (Fed. Cir. 1985).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some disclosure or suggestion, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). That knowledge cannot come from the applicant's invention itself. In re Oetiker, 977 F.2d at 1447, citing Diversitech Corp. v. Century Steps, Inc., 850 F.2d 675, 678-79, 7 USPQ2d 1315, 1318 (Fed. Cir. 1988); In re Geiger, 815 F.2d 686, 687, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1147, 227 USPQ 543, 551 (Fed. Cir. 1985).

Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The disclosure or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Appellant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

> [V]irtually all [inventions] are combinations of old elements. *Environmental Designs, Ltd. v. Union Oil Co.,* 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed. Cir. 1983); *see also Richdel, Inc. v. Sunspool Corp.,* 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed.Cir.1983) ("Most, if not all, inventions are

> combinations and mostly of old elements."). An examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability."

In re Rouffet, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998), citing Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ.2d 1551, 1554 (Fed. Cir. 1996).

The Examiner conceded that Nickolls does not teach a particle swarm optimizer. The March 8, 2007 rejection, page 3, lines 17-18. In formulating a rejection under 35 U. S. C. § 103, it is necessary to identify a reason why a person of ordinary skill in the art to which the invention in question pertains would have combined the prior art elements in the manner claimed. In this case, Nickolls knows the signals he is monitoring are coming from the heart. He knows they are of a few discrete types, each having well-established characteristics, each with a feature or features that enable a clinician to distinguish it from the characteristics of other distressed heart and healthy heart signals. There is no disclosure or suggestion in either Nickolls and Eberhart of the desirability of combining their teachings to solve the problem to which the present invention is addressed.

But further, nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 5's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the frequency spectra of known sources of ingress,*

> finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, teaching a neural network *the frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to *the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress* together includ[ing] using a particle swarm optimizer to find an *optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 5 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 5 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 10's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, digitizing the frequency spectrum of the ingress, comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the thus-digitized frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the frequency spectra of known sources of ingress*, finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*, teaching a neural network *the frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress* together includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of

> *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 10 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 10 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 15's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, digitizing the frequency spectrum of the ingress, comparing the digitized frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includ[ing] digitizing the frequency spectra of known sources of ingress, comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress* together includ[ing] finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to *the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to *the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together* includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 15 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 15 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 20's specifically recited

> method of *identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress, comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress include[ing] digitizing the frequency spectra of known sources of ingress, comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together* includ[ing] finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] teaching a neural network *the thus-digitized frequency spectra of known sources of ingress,* finding an optimum solution to the problem of comparison of *the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress* includ[ing] using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* teaching a neural network *the thus-digitized frequency spectra of known sources of ingress* and using a back propagation neural network to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together* includ[ing] using a particle swarm optimizer to find an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 20 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 20 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 25's specifically recited

> [a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the frequency spectra of known sources of ingress,* the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 25 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 25 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 30's specifically recited

> [a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress,* the device [ ] *for digitizing the frequency spectrum of the ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the frequency spectra of known sources of ingress,* the device includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress,* the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum

> solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 30 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 30 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 35's specifically recited

> [a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,]* the memory includ[ing] a memory for *storing the thus-digitized frequency spectra of known sources of ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the thus-digitized frequency spectra of known sources of ingress,* the device further includ[ing] a back propagation neural network for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the neural network and back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 35 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 35 is allowable at least on this basis.

Nowhere does the combination of Nickolls and Eberhart disclose or suggest claim 40's specifically recited

> [a]pparatus for *identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which*

> *frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress, the device [ ] for digitizing the frequency spectra of known sources of ingress[,] the memory [ ] for storing the thus-digitized frequency spectra of known sources of ingress,* the device [ ] for finding an optimum solution to the problem of *comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the device includ[ing] a neural network, the device teaching the neural network *the thus-digitized frequency spectra of known sources of ingress,* a back propagation neural network for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress,* the neural network and the back propagation neural network together includ[ing] a particle swarm optimizer for finding an optimum solution to the problem of *comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress*

(italics Appellant's). The italicized elements of claim 40 are neither disclosed nor suggested by any 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart. Claim 40 is allowable at least on this basis.

The Examiner did not explain any reason why a skilled artisan, without knowledge of the present invention, would have linked Nickolls and Eberhart as the focus of the 35 U. S. C. § 103 obviousness inquiry, or combined the two in the manner the Examiner has to solve the problem to which the present invention is addressed. The only source linking Nickolls and Eberhart to the present invention is the present application. It is reasonable to infer that the Examiner selected these references with the assistance of hindsight based on Appellant's claims. Courts forbid the use of this kind of hindsight reconstruction in the selection of references to establish 35 U. S. C. § 103 obviousness. In re Rouffet, 149 F.3d at 1358. See In re Gorman, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991). Absent any disclosure or suggestion why the Nickolls/Eberhart combination would be made by the ordinarily skilled artisan in the present art, the Examiner did not establish a *prima facie* case of 35 U. S. C. § 103 obviousness.

Accordingly, Appellant submits that the 35 U. S. C. § 103 rejection of dependent claims 5, 10, 15, 20, 25, 30, 35, and 40 based upon Nickolls and Eberhart is erroneous and should be reversed. Such action is respectfully requested.

IV. Summary Conclusions

Nickolls's device for examining heart-generated signals, and comparing those signals to known heart distress signals to identify which kind of distress the heart being monitored is experiencing is non-analogous art to the present invention's identification of the ingress noise from external and unknown sources into networks. Appellant's claimed methods are not inherent in Nickolls, even when Nickolls is considered with Peel, Wei, Stroetmann or Wirth (as previously noted, Kullok is not prior art). Nickolls does not anticipate the specifically recited combinations of elements contained in Appellant's claims. No 35 U. S. C. § 103 obvious combination of Nickolls and Eberhart discloses or suggests the specifically recited combinations of elements contained in Appellant's claims. The rejections of Appellant's claims are erroneous and should be reversed. Such action is respectfully requested.

Respectfully submitted,

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INDS02 RDC 905881

Claims Appendix

The claims on appeal follow:

1. A method of identifying a source of ingress into a network including storing frequency spectra of known sources of ingress, comparing the frequency spectrum of ingress to the frequency spectra of known sources of ingress, and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress.

2. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which of the frequency spectra of known sources of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

3. The method of claim 2 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

4. The method of claim 3 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

5. The method of claim 4 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

6. The method of claim 1 further including digitizing the frequency spectrum of the ingress.

7. The method of claim 6 wherein comparing the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the

thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

8. The method of claim 7 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes teaching a neural network the frequency spectra of known sources of ingress.

9. The method of claim 8 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

10. The method of claim 9 wherein teaching a neural network the frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

11. The method of claim 6 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

12. The method of claim 11 wherein comparing the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which of the thus-digitized frequency spectra of known sources of ingress is closest to the thus-digitized frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

13. The method of claim 12 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

14. The method of claim 13 wherein finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

15. The method of claim 14 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

16. The method of claim 1 wherein comparing the frequency spectrum of the ingress to the frequency spectra of known sources of ingress includes digitizing the frequency spectra of known sources of ingress.

17. The method of claim 16 wherein comparing the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress and determining from the comparison which thus-digitized frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress together include finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

18. The method of claim 17 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes teaching a neural network the thus-digitized frequency spectra of known sources of ingress.

19. The method of claim 18 wherein finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress includes using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

20. The method of claim 19 wherein teaching a neural network the thus-digitized frequency spectra of known sources of ingress and using a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum

of the ingress to the thus-digitized frequency spectra of known sources of ingress together include using a particle swarm optimizer to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

21. Apparatus for identifying a source of ingress into a network including memory for storing frequency spectra of known sources of ingress and a device for comparing the frequency spectrum of the ingress to frequency spectra of known sources of ingress and determining from the comparison which frequency spectrum of a known source of ingress is closest to the frequency spectrum of the ingress.

22. The apparatus of claim 21 wherein the device includes a device for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

23. The apparatus of claim 22 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

24. The apparatus of claim 23 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

25. The apparatus of claim 24 wherein the device further includes a back propagation neural network to find an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress, the neural network and back propagation neural network together including a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

26. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectrum of the ingress.

27. The apparatus of claim 26 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

28. The apparatus of claim 27 wherein the device includes a neural network, the device teaching the neural network the frequency spectra of known sources of ingress.

29. The apparatus of claim 28 wherein the device includes a back propagation neural network for finding an optimum solution to the problem of comparison of

the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

30. The apparatus of claim 29 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the frequency spectra of known sources of ingress.

31. The apparatus of claim 26 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

32. The apparatus of claim 31 wherein the device includes a device for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

33. The apparatus of claim 32 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

34. The apparatus of claim 33 wherein the device further includes a back propagation neural network for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

35. The apparatus of claim 34 wherein the neural network and back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the thus-digitized frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

36. The apparatus of claim 21 wherein the device includes a device for digitizing the frequency spectra of known sources of ingress and the memory includes a memory for storing the thus-digitized frequency spectra of known sources of ingress.

37. The apparatus of claim 36 wherein the device includes a device for finding an optimum solution to the problem of comparison of the stored frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

38. The apparatus of claim 37 wherein the device includes a neural network, the device teaching the neural network the thus-digitized frequency spectra of known sources of ingress.

39. The apparatus of claim 38 further including a back propagation neural network for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

40. The apparatus of claim 39 wherein the neural network and the back propagation neural network together include a particle swarm optimizer for finding an optimum solution to the problem of comparison of the frequency spectrum of the ingress to the thus-digitized frequency spectra of known sources of ingress.

Evidence Appendix

No evidence has been submitted in this case pursuant to 37 C. F. R. §§ 1.130-1.132.

Related Proceedings Appendix

There are no copies of decisions rendered by a court or the Board in any proceedings identified pursuant to 37 C. F. R. § 41.37(c)(1)(ii).